

What is claimed is:

1. A crimping apparatus comprising:

a pair of frames arranged orthogonally to a wire shifting direction;

5 a pair of crimpers each provided centrally in each frame;

a pair of connector tables each provided movably in the longitudinal direction of the frame;

locking means for securing the connector tables on both ends of each frame;

moving means for moving each said connector table along the frame; and

a pair of connector holding poles in each of which a plurality of connectors are arranged to be settable on each said connector table.

2. A crimping apparatus according to claim 1, wherein said moving means comprises a driving means driven by a servo motor, a cylinder secured to the driving means and an engagement hole formed in said connector holding pole in which a rod of the cylinder is engaged.

3. A crimping apparatus according to claim 1, wherein said crimper comprises a plurality of applicators having different crimping blades, a rotor with said plurality of applicators arranged circumferentially and means of

rotating said rotor.

4. A crimping apparatus according to claim 3, wherein said crimper comprises a slider for moving up and down said crimping blade, a cam body secured to the slider and having a horizontal groove, a rotating plate having an eccentric shaft to be engaged with said horizontal groove and a servo motor for driving said rotating plate.

5. A crimping apparatus comprising:  
a crimping blade which is vertically movable;  
a wire holder which is vertically movable together with said crimping blade;  
a connector arranged beneath said crimping blade;  
a wire receiver arranged on the lower side of the wire holder and oppositely thereto;  
an actuator with which said wire receiver is coupled so that the wire receiver is vertically movable.

6. A method of manufacturing a sub-harness using a crimping apparatus including a crimper provided centrally in a frame and a pair of first and second connector tables slidable in the longitudinal direction of the frame, comprising the steps of:

moving the first connector table immediately beneath said crimper;

supplying a connector to said second connector table while crimping a wire onto another connector on said first connector table to form a sub-harness;

5 returning said first connector table to an initial position;

moving said second connector table immediately beneath said crimper; and

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10 removing the sub-harness from the first connector table to supply the connector to said first connector table while crimping the wire onto the connector on the second connector table.

15 7. A method of manufacturing a sub-harness using a crimping apparatus including crimpers provided centrally in a pair of frames, respectively and a pair of first and second connector tables slidable in the longitudinal direction of each of the frames, comprising the steps of:

moving a first pair of connector tables on the one side of both frames to immediately beneath said crimpers;

20 6 crimping a wire on connectors on said first pair of connector tables to form a first sub-harness;

returning said first pair of connector tables on the one side to initial positions;

25 moving a second pair of connector tables on the other side of both frames to immediately beneath said crimpers; and

crimping the wire on connectors on said second pair of connector tables to form a second sub-harness.

5 8. A method of manufacturing a wiring harness according to claim 7, further comprising the steps:

returning one of said first pair of connector tables to its initial position after having crimping the wire on connectors on said first pair of connector tables to form the first harness;

10 moving one of said second pair of connector tables on the other side to immediately beneath the corresponding crimper; and

15 crimping the wire on the connectors on the said one of said second pair of connector tables to wire the wire so as to cross between said first sub-harness and said second sub-harness.

20 9. A method of manufacturing a sub-harness according to claim 6, wherein a connector holding pole in which a plurality of connectors are previously held in each of said connector tables.

25 10. A method of manufacturing a sub-harness according to claim 9, wherein said plurality of connectors belong to different kinds.

11. A method of manufacturing a sub-harness using the crimping apparatus defined in claim (3), wherein said rotor is rotated for each of the different kinds of connectors to select an appropriate crimping blade.

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12. A method of manufacturing a sub-harness using the crimping apparatus defined in claim (4), wherein the rpm of said servo motor is changed for each of different kinds of connectors to define the rotary angle of the rotary plate so that the ascend/descend stroke of the slider is adjusted to provide a crimping height for each connector.

13. A method of manufacturing a sub-harness using the crimping apparatus defined in claim (5), comprising the steps of:

positioning said wire receiver immediately beneath the wire;

sandwiching the wire by the wire holder and wire receiver so that it is fixed in a wire shifting direction relative to the crimping blade;

falling the wire holder and wire receiver integrally together with descent of the crimping blade; and

with the wire sandwiched between the wire holder and wire receiver and fixed in its position, crimping the wire onto the connector by the crimping blade.